

Confirmation No.7347

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	BOYLE	Examiner:	Chen, S.
Serial No.:	10/568,010	Group Art Unit:	2821
Filed:	February 10, 2006	Docket No.:	GB030136US1
Title:	ANTENNA ARRANGEMENT AND A MODULE AND A RADIO COMMUNICATIONS APPARATUS HAVING SUCH AN ARRANGEMENT		

APPEAL BRIEF

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Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Customer No. 65913

Dear Sir:

This Appeal Brief is submitted pursuant to 37 C.F.R. §41.37, in support of the Notice of Appeal filed January 11, 2008 and in response to the rejections of claims 1-3, 6-8 and 10 as set forth in the Final Office Action dated October 11, 2007, and in further response to the Advisory Action dated December 13, 2007.

Please charge Deposit Account number 50-0996 (NXPS.357PA) \$510.00 for filing this brief in support of an appeal as set forth in 37 C.F.R. §1.17(c). If necessary, authority is given to charge/credit Deposit Account 50-0996 additional fees/overages in support of this filing.

I. Real Party In Interest

The real party in interest is NXP Semiconductors. The application is presently assigned of record, at reel/frame nos. 017574/0146 to Koninklijke Philips Electronics, N.V., headquartered in Eindhoven, the Netherlands. We have been authorized by both the assignee of record and NXP Semiconductors to convey herein that the entire right, title and interest of the instant patent application has been transferred to NXP Semiconductors.

II. Related Appeals and Interferences

While Appellant is aware of other pending applications owned by the above-identified Assignee, Appellant is unaware of any related appeals, interferences or judicial proceedings that would have a bearing on the Board's decision in the instant appeal.

III. Status of Claims

Claims 1-3, 6-8 and 10 stand rejected and are presented for appeal. Claims 4, 5 and 9 have been cancelled. A complete listing of the claims under appeal is provided in an Appendix to this Brief.

IV. Status of Amendments

As indicated in the Advisory Action dated December 13, 2007, the amendments presented in the Response to Final Office Action dated November 26, 2007 were entered. No other amendments have been filed subsequent to the Response to Final Office Action.

V. Summary of Claimed Subject Matter

Appellant's invention is related to patch antenna arrangements.

Commensurate with independent claim 1, an example embodiment of the present invention is directed to an antenna arrangement that includes a substantially planar patch conductor (*see, e.g.*, planar patch antenna 14 shown in Figs. 1 and 2, along with page 5:19-24) having a first feed connection point for connection to radio circuitry (*see, e.g.*,

feed pin 18 shown in Figs. 1 and 2, along with page 5:22-24) and a second feed connection point for connection to a ground plane (*see, e.g.*, shorting pin 20 shown in Figs. 1 and 2, along with page 5:22-24), a first, differential slot in the patch conductor between the first and second connection points (*see, e.g.*, differential slot 22 shown in Figs. 1 and 2, along with page 5:27-29) and a second, dual band slot located in the patch conductor outside the area between the first and second connection points (*see, e.g.*, dual band slot 24 shown in Figs. 1 and 2, along with page 5:9-6:2), wherein the length of the first slot is such as to provide an additional resonance (*see, e.g.*, page 6:11-13), and the width of the patch conductor between the first and the second slots is selected to give an impedance less than a system impedance (*see, e.g.*, widths A, B' and B'' indicated in Fig. 2, along with page 6:5-10 and page 7:6-9).

Commensurate with independent claim 6, an example embodiment of the present invention is directed to a module comprising a printed circuit board providing a ground plane (*see, e.g.*, PCB 12 shown in Figs. 1 and 2, along with page 5:15-19), radio circuitry mounted on the PCB (*see, e.g.*, page 5:15-19), and an antenna arrangement substantially as recited in claim 1 (*see above*).

Commensurate with independent claim 10, an example embodiment of the present invention is directed to a radio communications apparatus comprising a casing (*see, e.g.*, casing 10 shown in Fig. 1, along with page 5:15-19) containing a printed circuit board providing a ground plane (*see, e.g.*, PCB 12 shown in Figs. 1 and 2, along with page 5:15-19), radio circuitry mounted on the printed circuit board (*see, e.g.*, page 5:15-19), and an antenna arrangement substantially as recited in claim 1 (*see above*).

As required by 37 C.F.R. § 41.37(c)(1)(v), a concise explanation of the subject matter defined in the independent claims involved in the appeal is provided herein. Appellant notes that representative subject matter is identified for these claims; however, the abundance of supporting subject matter in the application prohibits identifying all textual and diagrammatic references to each claimed recitation. Appellant thus submits that other application subject matter, which supports the claims but is not specifically identified above, may be found elsewhere in the application. Appellant further notes that this summary does not provide an exhaustive or exclusive view of the present subject

matter, and Appellant refers to the appended claims and their legal equivalents for a complete statement of the invention.

VI. Grounds of Rejection to be Reviewed Upon Appeal

The only ground of rejection remaining to be reviewed on appeal is as follows:

A. Claims 1-3, 6-8 and 10 stand rejected under 35 U.S.C. § 102(b) over Tarvas (EP 1 304 765 A2).

VII. Argument

Appellant requests that the Board reverse the rejections of all pending claims 1-3, 6-8 and 10 because the rejections are predicated on an erroneous interpretation of the Tarvas reference. Appellant submits that the Tarvas reference is deficient in that it does not teach or suggest all the elements of Appellant's claims, and in particular the claimed aspects related to the width of the patch conductor between the differential and dual band slots being selected to give an impedance less than a system impedance. Moreover, Appellant submits that Tarvas provides no reason to modify the disclosed antenna, and provides no appreciation for why selecting the width between the slots is important for controlling the impedance, for example to mitigate detuning of the antenna by the user.

A. The rejection of claims 1-3, 6-8 and 10 under U.S.C. § 102(b) over Tarvas should be reversed because Tarvas fails to disclose selecting the width between slots in a patch antenna .

To sustain a § 102 rejection, each and every claim element must be taught by the applied reference. Appellant submits that the Tarvas reference clearly fails to meet this standard because Tarvas does not disclose the width of the patch conductor between the differential and dual band slots being selected to give an impedance less than a system impedance. The cited portions of the Tarvas reference do not make any mention of the width of planar element 220 between the first slot 231 and the second slot 232, let alone that this width is selected based upon certain parameters as in the claimed invention. *See,*

e.g., Fig. 2a (reproduced below) and Paragraphs 0011-0013. Tarvas merely discusses that antenna matching in the lower band can be optimized by shaping the second slot without disclosing anything about selecting a width between slots as in the claimed invention. Such disclosure amounts only to what is generally appreciated in the art – that using the length and shape of the differential slot to control antenna resonances and to increase bandwidth.

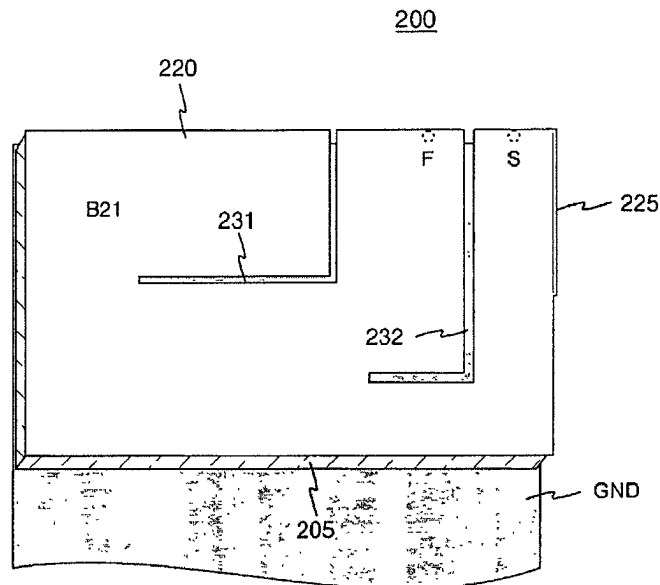


Fig. 2a

Tarvas Fig. 2a

Appellant's teachings and claim recitations go beyond this basic understanding, and discuss controlling two different characteristics of the antenna slots. The first involves using the lengths and shapes of the slots to control the resonances and to increase bandwidth. The second involves using the spacings between the slots to control impedance, for example controlling the ratio of the widths A and B indicated in Appellant's Fig. 2 (reproduced below). Controlling the spacing between slots may be used, for example, to mitigate user detuning (*see e.g.*, paragraphs 0008, 0012, 0027, 0032). The Tarvas reference includes no such disclosure and no such appreciation. This is borne out by observing that the drawings provided by Tarvas provide no indication of

slot separation, in contrast to Appellant's Fig. 2 which, along with paragraph 0027 for example, indicates slot separations A and B, the importance of the ratio A/B, and that a small width A provides a low impedance transformation.

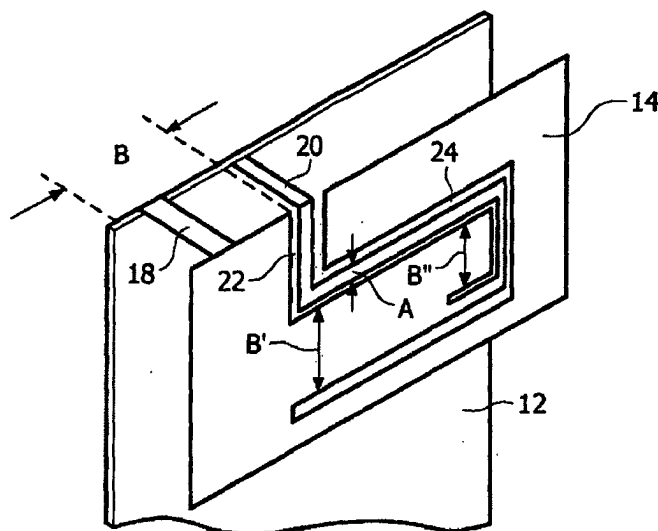


FIG. 2

Appellant's Fig. 2

In response to Appellant, the Examiner has argued that the structure of Tarvas is capable of performing the same function as Appellant's recited antenna, and therefore, because a width exists between the slots shown by Tarvas, the Tarvas structure must read on Appellant's claims. Appellant submits that merely pointing out that the slots in the antenna of Tarvas are separated by a width is insufficient to demonstrate that the width is selected to achieve the claimed result. To the extent that the Examiner's reply amounts to an inherency argument, according to M.P.E.P. § 2112(IV) "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." In this instance, the cited portions of the Tarvas reference do not make any mention of the width of planer element 220 between the first slot 231 and the second slot 232. Furthermore, one of skill in the art would not recognize from the relatively large separations between the slots shown by

Tarvas that the width between the slots is a parameter that should be controlled to produced a desired impedance matching. Instead, one of skill in the art is left with the understanding that it is merely the individual length and shape of the slots, not any parameter concerning the mutual relationship between the slots, that is to be controlled.

For these reasons, Appellant therefore submits that the Examiner has failed to provide any basis in fact or technical reasoning to reasonably support a rejection based on the position that Tarvas teaches (explicitly, inherently, or otherwise) the width between antenna slots being selected to give an impedance less than a system impedance as recited in Appellant's claims. Appellant requests that the Board find that the § 102(b) rejection of claims 1-3, 6-8 and 10 is improper, and reverse the rejection.

VIII. Conclusion

In view of the above, Appellant submits that the rejections of claims 1-3, 6-8 and 10 are improper. Appellant therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

Authority to charge the undersigned's deposit account was provided on the first page of this brief.

Please direct all correspondence to:

Corporate Patent Counsel
NXP Intellectual Property & Standards
1109 McKay Drive; Mail Stop SJ41
San Jose, CA 95131

CUSTOMER NO. 65913

Respectfully Submitted,

By: 

Name: Robert J. Crawford

Reg. No.: 32,122

Robert J. Pechman

Reg. No.: 45,002

Tel: 651 686-6633

(NXPS.357PA)

APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

(S/N 10/568,010)

1. An antenna arrangement comprising a substantially planar patch conductor having a first feed connection point for connection to radio circuitry and a second feed connection point for connection to a ground plane, a first, differential slot in the patch conductor between the first and second connection points and a second, dual band slot located in the patch conductor outside the area between the first and second connection points, wherein the length of the first slot is such as to provide an additional resonance, and the width of the patch conductor between the first and the second slots is selected to give an impedance less than a system impedance.
2. An antenna arrangement as claimed in claim 1, wherein the length of the first slot is greater than a quarter wavelength.
3. An antenna arrangement as claimed in claim 1, wherein the length of the first slot is such that the additional resonance combines with an adjacent resonance.
4. (Canceled)
5. (Canceled)
6. A module comprising a printed circuit board providing a ground plane, radio circuitry mounted on the PCB, and an antenna arrangement, the antenna arrangement comprising a substantially planar patch conductor having a first feed connection point for connection to the radio circuitry and a second feed connection point for connection to the ground plane, a first, differential slot in the patch conductor between the first and second connection points and a second, dual band slot located in the patch conductor outside the area between the first and second connection points, wherein the length of the first slot is such as to provide an additional resonance, and the width of the patch conductor between the first and the second slots is selected to give an impedance less than a system

impedance.

7. A module as claimed in claim 6, wherein the length of the first slot is greater than a quarter wavelength.

8. A module as claimed in claim 6, wherein the length of the first slot is such that the additional resonance combines with an adjacent resonance.

9. (Canceled)

10. A radio communications apparatus comprising a casing containing a printed circuit board providing a ground plane, radio circuitry mounted on the printed circuit board, and an antenna arrangement, the antenna arrangement comprising a substantially planar patch conductor having a first feed connection point for connection to the radio circuitry and a second feed connection point for connection to the ground plane, a first, differential slot in the patch conductor between the first and second connection points and a second, dual band slot located in the patch conductor outside the area between the first and second connection points, wherein the length of the first slot is such as to provide an additional resonance, and the width of the patch conductor between the first and the second slots is selected to give an impedance less than a system impedance.

APPENDIX OF EVIDENCE

Appellant is unaware of any evidence submitted in this application pursuant to 37 C.F.R. §§ 1.130, 1.131, and 1.132.

APPENDIX OF RELATED PROCEEDINGS

As stated in Section II above, Appellant is unaware of any related appeals, interferences or judicial proceedings.